

INTEROFFICE MEMORANDUM

DATE: November 5, 1971

TO: BRIDGE DESIGN PERSONNEL
FROM: Frank Harrison, Assistant Bridge Engineer
SUBJECT: Office Policy on Design Items

Interim 6 of the 1971 AASHO Interim Specifications covering Article 1.7.68 - Cover Plates, permits cover plate thickness to be as great as twice the thickness of the flange to which it is welded. Until further notice, our office will not use this change in the specifications, but will continue to limit the thickness of cover plates to approximately 1-1/2 times the flange thickness. The 1-1/2 times the flange thickness may be used loosely, allowing 1/16" or 1/8" overrun. Cover plate widths should be at least 1-1/2" less than the flange widths to facilitate welding.

Article 1.5.2 - General Assumptions - subarticle (4). The ration "n" as listed in the table for Class S concrete is 10 for computations of strength and 8 for computations of deflection. Our office policy shall be to use n=10 for both these computation.

7119

Build 10



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION XIX
3128 Federal Office Building
Little Rock, Arkansas 72201

October 29, 1971

IN REPLY REFER TO
PFM 40-3.1 - Standards for
Preparation of P.S.& E.
for Federal-aid Projects

Mr. Ward Goodman
Director of Highways
State Highway Department
Little Rock, Arkansas

Dear Mr. Goodman:

Enclosed for your information and use are seven copies of revised pages
3 through 6 of PFM 40-3.1.

Please note the major changes are concerned with paragraphs 5f and 5g
in the general area of guarantees and warranties.

Sincerely yours,

C. F. McMillen
C. F. McMillen
Division Engineer

- Enclosure
- C-1 CONTRACT
 - ROW
 - BIDDING
 - SECONDARY EPS
 - TRAFFIC SIGNS
 - PAINT
 - RIA
 - UTILITY SIGNS
 - PIR
 - O.E.
 - 309.50 P.F.M.

REGIONAL DIVISION
FEDERAL HIGHWAY DEPT.
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OFFICE ENGINEER
ARIZONA STATE HIGHWAY DEPT.



U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION
 WASHINGTON, D.C. 20591

POLICY AND PROCEDURE MEMORANDUM

Transmittal 211
 October 12, 1971
 HO-33

1. NATERIAL TRANSMITTED

PM 40-3.1, Plans and Specifications for Federal-Aid Projects
 (Standards for Preparation) pages 3 through 6.

2. EXISTING ISSUANCES AFFECTED

PM 40-3.1 dated March 9, 1966, is revised by expanding paragraph 5f
 and adding a new paragraph 5g.

3. COMMENTS

Paragraph 5e has been revised to correct a reference to PPM 20-6.3.

Paragraph 5f has been expanded to cover guarantees and warranties
 offered as customary trade practice.

A new paragraph, 5g, has been added to cover manufacturers' and
 contractors' warranties on electrical and mechanical equipment.

Former paragraphs 5g through 5o have been renumbered 5h through 5p
 respectively.

NOTE →

F. C. Turner

F. C. Turner
 Federal Highway Administrator

Distribution
 Basic

REMOVE		INSERT
Page(s)	Date	Page(s)
3 thru 5	October 1, 1959	3 thru 6

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OFFICE ENGINEER
 MANASSAS DISTRICT HEADQUARTERS

similar purposes should be identified on the plans or in the special provisions for the information of prospective bidders.

k. A general plan or layout shall be shown for contiguous highways and bridges to be constructed without Federal participation. The layout shall be sufficient to show the location of the work in relation to the project including such details as span lengths and clearance, alignment, grade, and other information as may be needed to establish their relationship to the project.

l. Profiles shall show grade and surface lines, datum line, station ordinate lines, length of vertical curves, and percentages of gradient. If plain sheets are used, surface and grade elevations shall be shown at station ordinates and at changes of gradient. If standard plan and profile sheets are used, surface elevations may be omitted and grade elevations shown at changes of gradient only. The clearance and the cross section of the stream bed under each existing bridge shall be shown. If possible, balance points of the excavation and fill and the quantities involved shall be shown.

m. The profile grade shall represent the trace of the vertical plane intersecting the top surface of the wearing course, base course or other surface, usually along the centerline of the proposed roadbed; however, when not along the centerline its location shall be shown. A notation shall be included to indicate whether the grade line represents the surface of pavement or subgrade. The surface line shall represent the trace of a vertical plane intersecting the present traveled way or ground line over or under the profile grade.

n. Earthwork computation may be done by the cross sectioning method described below or by any combination of aerial photography and photogrammetric and electronic computer methods that have demonstrated acceptable accuracy. If these methods are employed, the earthwork data shall be available in the form of machine plotted cross sections or tabulation summaries. If cross sectioning is used, sections taken as often as necessary to determine accurately the character and extent of the proposed work shall be available. They shall be plotted to a scale of one inch equals ten feet or to a larger scale, such as one inch equals five feet, if the State so desires. They shall be plotted from the bottom of the sheet upward, separated sufficiently to eliminate excessive interference. Either the lower or right hand side may be used as the bottom in plotting. The cross section shall show the profile of the ground line and the proposed cross section. The side slopes and ditches shall be shown with the ground line extending slightly beyond the slope intersections.

Each cross section shall be marked with its station location, grade line elevation, and areas. Additional information may be shown as required.

o. Detail plans for culverts (drainage structures 20 feet or less in length between abutments measured along the centerline of the roadway) shall be fully dimensioned and shall be accompanied by such sectional drawings as are needed to detail the structure completely. The plans shall include the quantities of materials required, the reinforcing bar list, the bar bending and other pertinent details. They shall show the design loadings, the working stresses used, and the permissible classes of concrete and grades of steel. Reference should be made to the applicable specifications. Detail plans for other minor structures, such as retaining walls, erosion control structures, inlets, and manholes, shall comply with the same requirements as applicable.

p. Detail plans for bridges, in addition to complying with the requirements above, shall include a site plan, location and log of each foundation sounding or boring indicating the results of the State's explorations, profile of crossing, design and construction details and all other details essential to completeness.

q. Sizes, form, and arrangement of standard plans also shall conform to these requirements. Each set of standard plans shall bear the name of the State, title indicating the purpose and limitation of its application and use, a designating number, and the date of the last revision or modification. There should be a notation on the plans indicating that the approved standard specifications and amendments in effect at the time of bidding shall automatically apply.

5. SPECIFICATIONS

a. Standard specifications shall be in printed form, preferably on paper approximately 4 1/2 x 7 3/4 inches. Special provisions and supplemental specifications shall be in printed, mimeographed or other acceptably reproduced form, preferably on paper approximately 8 x 10 1/2 inches. Corrections or alterations to these printed or mimeographed documents will not be accepted. Such corrections or alterations as are required may be made by means of addenda.

b. Special provisions are specifications for governing all matters peculiar to the individual project, and therefore are not covered in the standard specifications. They should be held to a minimum and, so far as possible, applicable standard specifications should be utilized.

c. Supplemental specifications are those adopted subsequent to the publication of the standard or general specifications and involve new construction items or substantial changes in the standard specifications. The supplemental specifications should be logically arranged and should be either in printed or other acceptably reproduced form on a single sheet or in a bound pamphlet with each individual supplemental specification bearing an identifying symbol and date.

d. Direct reference to proprietary specifications of national, regional, or local trade associations should not be included in specifications inasmuch as such proprietary specifications are subject to change without notice to or acceptance by the States or the Federal Highway Administration. Such references will be excluded from approval. If recourse must be taken to the use of proprietary specifications, the complete text, or such parts as are applicable, should be incorporated in the printed State standard specifications book.

e. The use of trade names in specifications and on plans should be avoided. Instead, specifications should be formulated that will obtain the desired results and at the same time assure full opportunity for competition among equivalent materials, equipment and methods. References in specifications and on plans to single trade name materials will not be approved on Federal-aid contracts. In exceptional cases, however, where satisfactory specifications cannot be developed by the highway agencies or obtained from organizations maintained for the specific purpose of developing specification requirements based on laboratory tests or other performance requirements, there will be no objection to the use of trade name designations provided all, or at least a reasonable number, of acceptable materials or products are listed. The foregoing procedure will be permitted for a reasonable period while specifications based on performance requirements are being developed. These requirements are not intended to limit the development of new materials, equipment or methods or to discourage ingenious utilization of them. New materials, equipment or methods that show sufficient promise may be included and evaluated in experimental construction in accordance with the provisions of PPM 20-6.3.

f. Except as provided for in paragraph (g) below, guaranty or warranty clauses that require the contractor to guarantee or warrant materials and workmanship or to otherwise maintain the work for a specified period after its satisfactory completion by the contractor and its final acceptance by the State, will not be approved for use in Federal-aid contracts. Work performed and materials replaced under

such guaranty or warranty clauses after final acceptance of the work is not eligible for Federal participation. The foregoing restrictions are not intended to prevent a State from benefiting under any warranty or guaranty given as a customary trade practice for any material or product purchased for use on a Federal-aid project. No objection will be made to provisions in Federal-aid contracts requiring the contractor to obtain, and assign to the State, such warranties or guarantees.

g. Contracts which involve furnishing and/or installing electrical or mechanical equipment should generally include contract clauses that require:

(1) manufacturers' warranties or guarantees on all electrical and mechanical equipment, consistent with those provided as customary trade practice.

(2) contractors' warranties or guarantees providing for satisfactory in-service operation of the mechanical and electrical equipment and related components for a period not to exceed 6 months following project acceptance.

h. Standard specifications shall conform in arrangement to the following outline:

Division I	General Requirements
Division II	Construction Details
Part 1	Earthwork
Part 2	Base Courses
Part 3	Surface Courses
Part 4	Structures
Part 5	Incidentals
Division III	Material Details (Optional)

i. Division I, General Requirements, shall be in substantial agreement with the Specifications for General Provisions of the American Association of State Highway Officials.

j. Each part under Division II, Construction Details, shall contain individual specifications for each work item. Insofar as possible each specification shall be complete within itself.

k. Individual specifications under Division II, Part 1, Earthwork, shall be arranged as nearly as possible in the usual construction sequence. It is not the intent that all work items listed below be covered by a specification. Items that are not pertinent to any work contemplated by the State need not be included; however, any additional items that are pertinent to contemplated work should be inserted in their logical position. Neither is it the intent that the suggested items be rigidly followed. Some states may find it

advisable to include two suggested items under one specification or divide one suggested item into two or more specifications; however, the items and the order of arrangement should be substantially as follows:

Part 1 Earthwork

- Clearing and grubbing
- Roadway and borrow excavation
- Excavation and backfill for structures
- Overhaul
- Embankment
- Watering
- Compaction
- Disposal of surplus material
- Subbase
- Subgrade
- Obliteration of old roadways
- Roadside cleanup

l. Division II, Part 2, Base Courses, and Part 3, Surface Courses, shall include individual specifications for each of the types that the State contemplates constructing. The specifications should appear in substantially the following order:

- Subgrade or base preparation or treatment
- Soil stabilization, various types
- Aggregate, various types
- Bituminous types
 - Surface treatments
 - Penetrating macadam
 - Road-mix
 - Bituminous concrete
- Portland cement concrete

m. Division II, Part 4, Structures, shall be in substantial agreement with sections 2 to 23, inclusive, of the Standard Specifications for Highway Bridges of the American Association of State Highway Officials with the addition of specifications for pipe culverts. The form and arrangement may be modified by including under Part 1, Earthwork, items similar to those shown in that part.

n. Division II, Part 5, Incidentals, shall include individual specifications for types of construction not applicable under any of the preceding classifications, such as:

- Rip rap
- Underdrains
- Sidewalks
- Curb and gutter
- Guardrail
- Fences
- Signs and markers
- Roadside improvement

o. The use of Division III, Materials Details, is optional. If so desired, the individual specifications for work items provided for under subparagraph o (2) below may be

grouped by types of material in one division. In such case appropriate cross reference to them shall be made in the "Materials" article of each specification item.

p. Individual specifications for each work item shall be divided into five headings as follows:

(1) Description: This article shall contain a short condensed statement of the work to be done, together with references to specifications, special provisions or plans that further define the work. When necessary or desirable for clarity, this article shall establish the relationship of the work item to other work items or other phases of the construction.

(2) Materials: Material specifications for the work item may be either shown in this article or grouped with those of other items in a separate division as provided in subparagraph n. The following provisions apply in either case. This article shall designate the materials to be used in the work item and establish the requirements therefor. Complete specifications of the properties of each material and the methods of test shall be detailed, except that reference may be made to applicable specifications under other work items, or to applicable AASHTO, ASTM, or Federal specifications.

(3) Construction Details: This article shall show the sequence of construction operations and the end product to be obtained. While specifications requirements should be sufficient to insure satisfactory completion of the work, specific requirements pertaining to methods and equipment should be held to the minimum practicable in order to permit the use of improved equipment and to encourage contractors to apply new and advanced ideas in construction methods.

(4) Method of Measurement: This article shall designate the components of the completed work item that are to be measured for payment, the units of measurement, whether measured in original position, in transporting vehicles, or in the completed work. Adjustment for temperature and any other requirements needed to establish a definite measured unit should also be designated.

(5) Basis of Payment: This article shall designate the units for which payment will be made and define the scope of the work covered by such payment.

6. CONTRACT FORMS

a. Contract forms shall be prepared in accordance with the appropriate parts of the Specifications for General Provisions of the American Association of State Highway Officials. They should be arranged in the following order and if desired may be bound as a pamphlet.

- (1) Notice to Contractors
- (2) Special Provisions
- (3) Required Provisions
- (4) Proposal
- (5) Bid Schedule
- (6) Bid Guaranty
- (7) Contract
- (8) Contract Bond

b. The form of contract should be written as simply and concisely as possible, and in conformance with governing statutes. The Federal Government shall not appear as a party to the formal contract.

F. C. Turner

F. C. Turner
Federal Highway Administrator

Memorandum

APTS U.S. DEPARTMENT OF TRANSPORTATION
DIV. OF FEDERAL HIGHWAY ADMINISTRATION

Engr Coord
Dist A
Dist B
Bridge
R-O-W
Admin

APR 07-28-71

DATE: March 7, 1972

In reply refer to: EN-32

TO : Regional Federal Highway Administrators
Regions 1, 3, through 10

FROM : D. W. Loutzenheiser, Acting Director, Office of Engineering
By: W. J. Wilkes, Chief, Bridge Division
Washington, D. C.

SUBJECT: Construction Joints in Substructure Units

A	I	TO

gab
WJW
JWK
D.A.L.
MASOR
LDE

Previous correspondence apparently inferred that a 50-foot pour should be considered the maximum permissible limit in any substructure unit.

The purpose of this memorandum is to emphasize that currently we do not uphold any fixed limitation for the spacing of construction joints in the substructure. Rather, we believe such a limitation should be restricted to massive piers and abutments with continuous footings where temperature stresses can be critical. The spacing of construction joints for all other units should be based on actual engineering consideration of the specific case.

The short periods between concrete pours do not allow for appreciable shrinkage reduction. However, in most cases, hinges at top and/or bottom of the columns, and/or minimum size columns could mitigate thermal and shrinkage stresses in column bents.

Figure 8 on Page 5 of Portland Cement Association Engineering Bulletin No. 3 dated August, 1969, entitled "Design of Continuous Highway Bridges with Precast, Prestressed Concrete Girders," has a curve relating the concrete shrinkage to curing time which indicates that it takes approximately two months for a concrete pour to obtain 50% of its total shrinkage.

Addressees:

Regional Bridge Division 1st Endorsement April 5, 1972
06-00.6

To: Division Engineers - Messrs. E. A. Sparks, J. F. Cary, C. F. McMillen, M. C. Reinhardt, and H. W. Adkison

For your information and future guidance.

Morris E. Monro
Morris E. Monro, Director
Highway Programs Office

L.R.K.

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How about this?

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